was 23.3, highest weight was 95.4 kg and lowest weight was 30.5 kg. Mean duration of complaints was 5.9 years and mean duration since diagnosis was 3.4 years.
Fifty three patients considered their family to be highly functional, 28 as moderately dysfunctional and 9 as severely dysfunctional. Pearson's correlation showed that Family APGAR is moderately and inversely correlated with pain (r= -0.3373; p=0.0002), stiffness (r= -0.3642; p=0.0004), function (r= -0.3646; p=0.0004) and total WOMAC scores (r= -0.3880; p=0.0002). Analysis of variance was performed on the 3 FAMILY APGAR groups and showed significant difference in terms of their total WOMAC scores, pain, stiffness and function subscales with p=0.0076, p=0.0032, p=0.0165 and p=0.0159 respectively. As Family APGAR scores increase, there is a significant decrease in all WOMAC subscales.

Table 3. Mean (SD) WOMAC Scores per Family APGAR Class

WOMAC Score	Severely Dysfunctional Family Family APGAR 0-3 n=9	Moderately Dysfunctional Family Family APGAR 4-7 n=28	Highly Functional Family Family APGAR 8-10 n=53	P
Total WOMAC				
Mean	1118.56	925.39	676.51	0.0076
SD	545.28	494.58	421.70	
Pain Subscale				
Mean	215.22	204.29	133.66	0.0032
SD	121.11	122.25	86.00	
Stiffness Subscale				
Mean	104.78	78.79	60.74	0.0165
SD	55.65	42.13	44.85	
Function Subscale				
Mean	798.56	642.32	485.11	0.0159
SD	389.99	361.05	317.61	

Conclusions: We described the clinical profile of 90 patients with OA of the knees. More than half of the subjects perceived their families to be highly functional. The moderate and inverse relationship between Family APGAR scores and WOMAC scores is statistically significant. This paper concludes that higher Family APGAR scores in our population of knee OA patients correlates with better quality of life as measured by WOMAC.

306

DOES OVERWEIGHT AND OBESITY INFLUENCE THE CLINICAL OUTCOME AND THE QUALITY OF LIFE AT FIVE YEARS FOLLOWING PRIMARY TOTAL KNEE REPLACEMENT?

A. Liljensøe
Aarhus Univ. Hosp., Aarhus, Denmark

Purpose: The purpose of this study was to investigate whether there is an association between the preoperative body mass index in total knee replacement patients and the effect three to five years postoperative.
Methods: 197 patients who had undergone primary total knee replacement in the period 1.1.2005-31.12.2006 participated in a three-five years of follow-up study. Outcome measures were self-rated health (SF-36), which consists of eight strands and two component scores, physical component score and mental component scores and the Knee Society rating system (KSS) (knee score and function scores), and improvement of the two KSS scores from baseline to follow-up.
Results: Whit Ordinal logistic regression (adjusted for gender, age, basic disease and surgical procedure) were found statistically significant association between body mass index and nine of the fourteen outcome measures. For all outcome measures were found OR >1. With a difference in body mass index of 1kg/m^2 increases the risk of lower scores from a minimum of 2% OR 1.02 (0.97-1.07) p=0.5 (mental component score) to maximum 14% OR 1.14 (1.08-1.21) p<0.001 (KSS function score). With a difference in body mass index on 5kg/m^2 increases the risk of lower scores from a minimum of 9% OR 1.09 (mental components scores) to a maximum of 96% OR 1.96 (KSS function scores). With a difference in body mass index of 10kg/m^2 rises risk of worse score with minimum 19% OR 1.19 (mental component score) to a maximum of 284% OR 3.84 (KSS function score).
Conclusions: There is a clear association between body mass index and efficacy 3-5 years following primary total knee replacement. More than half of the Outcome measures were statistically significant and the outcomes that were not statistically significant are clinically interesting. High body mass index increases the risk of poor outcome after total knee Arthroplasty.

307

SIX MONTHS AFTER TOTAL HIP ARTHROPLASTY PATIENS PERFORM ACTIVITIES AS GOOD AS HEALHTY MATCHED CONTROLS

M.M. Vissers, J.B. Bussmann, J.A. Verhaar, M. Reijman
Erasmus Univ. Med. Ctr., Rotterdam, Netherlands

Purpose: A previous study of our group showed that six months after total hip arthroplasty (THA) patients did not increase their overall actual daily activity level, despite a significant improvement of perceived physical functioning. Furthermore, their actual daily activity level was still low compared to a control group with no known disorders. These results might be explained by the mechanism that postoperative recovery is not expressed by a more active lifestyle, but by an improvement of performance, i.e. patients perform their activities in daily life more easily, efficiently and/or faster.
The aim of our study was to examine performance aspects of actual daily activity in the home situation of patients before and six months after THA. Furthermore, we examined whether the performance of both end-stage OA patients and THA patients differed from healthy matched controls.
Methods: Thirty patients were measured with an accelerometry-based Activity Monitor before and six months after THA. The patients were matched to thirty healthy controls on gender and age (± 2 years). We evaluated the activities walking and chair rising. For the walking activity two outcome measures were analysed: stride frequency and an outcome measure closely related to walking speed. For the chair rising activity we evaluated the duration of the chair rising movement. The differences between the preoperative and postoperative measurements were evaluated by the Wilcoxon test. The differences between hip patients and healthy controls were evaluated by the Mann-Whitney U-test.
Results: Six months postoperative THA patients walked faster (0.261g versus 0.213g; P-value <0.0001) and with a higher stride frequency (56.0 strides/min versus 52.0 strides/min; P-value <0.0001), and they raised faster from a chair compared to preoperative (2.9s versus 3.4s; P-value 0.001). They differed on these aspects from the control subjects before surgery, but this difference disappeared six months after THA.
Conclusions: THA results in changes in and normalisation of the performance aspects of actual daily activity six months after surgery. The results of our study are unique, because to our knowledge no other studies have evaluated performance aspects of actual daily activity in the home situation of patients before and after THA.

308

REVISED VIEWS ON THE TIMING AND REHABILITATION FOR TOTAL KNEE ARTHROPLASTY

J. Zeni Jr., L. Snyder-Mackler
Univ. of Delaware, Newark, DE

Purpose: The purpose of this study was to critically interpret longitudinal functional and motion analysis data collected on persons prior to and following total knee arthroplasty (TKA) for unilateral knee osteoarthritis (OA). This evaluation will help elucidate appropriate timing of TKA surgery and direct future post-operative rehabilitation protocols.
Methods: Two hundred sixteen persons underwent TKA and participated in pre- and post-operative functional using the Delaware Osteoarthritis Profile, a comprehensive battery of physical performance tests and self-report of function questionnaires. These subjects were compared to 64 healthy adults who underwent the same testing. OA subjects were excluded if they had neurological impairments or maximal knee pain (greater than 4 out of 10) on the contralateral side. While these data have been or will be published separately, we collectively evaluated the findings from these studies to: 1) explicate the most appropriate timing of TKA, 2) examine the learned abnormal patterns that need to be eradicated following TKA surgery and 3) suggest rehabilitation techniques to overcome persistent movement dysfunction.
Results: Significant and clinically meaningful improvements in strength and function were seen after TKA. Despite these improvements mean values for the functional variables remained lower than healthy controls 2 years after TKA, although no significant differences in strength existed between TKA and control subjects 2 years after TKA. BMI significantly increased within 2 years after TKA and remained significantly higher than the controls. A significantly greater percentage of persons with OA required a handrail prior to TKA (63 out of 105) compared to the control group (19

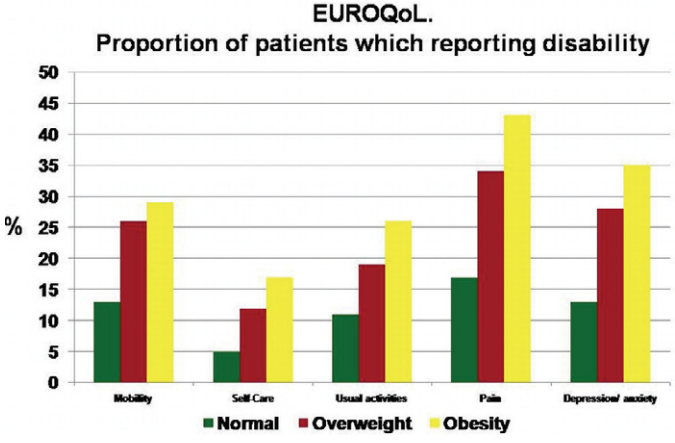
out of 64). Two years after TKA the majority of TKA patients still required a handrail (57 out of 105).
Persons who underwent TKA had significantly higher adduction moments on the non-operated side compared to operated and control limbs during stair ascent and descent and the pain and strength of the non-operated limb was the best predictor of long term functional outcomes. The strength of the non-operated side measured 1 month after surgery was also significantly predictive of functional changes 2 years after TKA. Of the initial 216 persons in the TKA group, 17 underwent contralateral TKA within 2 years.
Conclusions: ersons with knee OA waited until they experienced remarkable quadriceps weakness, difficulty with stairs, reduced gait speed and increased BMI before undergoing TKA. The rehabilitation protocol in this study utilized an aggressive quadriceps strengthening regimen. This regimen produced significant improvements that were greater than the normal post-operative standard of care. Despite this, some functional variables were still significantly lower than healthy controls, even 2 years after TKA. Persistent kinematic and kinetic gait abnormalities that are present prior to surgery persisted after surgery. This suggests that current rehabilitation protocols, even with aggressive strengthening, do not completely restore function or address biomechanical changes that are adopted prior to TKA.
From a functional perspective, persons with end-stage knee OA may benefit from TKA intervention earlier in the course of the disease process. Surgical intervention prior to severe functional disability and quadriceps weakness may result in greater long term outcomes. This may also reduce the magnitude of learned abnormal biomechanical movement patterns that place greater load on the non-operated limb. Rehabilitation protocols that include an aggressive strengthening component should become the standard of care after TKA. In addition, all persons after TKA should have access to weight management or nutrition professionals to counter the increase in BMI seen in our sample. Future research should evaluate the effect of rehabilitation protocols that include a biofeedback protocol to help restore symmetrical movement patterns. This may reduce the load of the non-operated limb and lower the need for subsequent contralateral TKA.

309

IMPACT OF "GLOBESITY" IN KNEE OSTEOARTHRITIS

A.H. Peña, P. Escalante, R. Rosas, M. Lozano, C.J. Pineda, R. Espinosa
Natl. Rehabilitation Inst., Mexico, city, Mexico

Purpose: Background. Globesity, a term coined by the WHO to describe the obesity pandemic in the world, has been described as a risk factor for genesis, progression and disability in patients with OA. Objectives. To estimate the punctual prevalence of overweight or obesity in knee Osteoarthritis (OA) patients and to evaluate the impact of obesity on knee function and pain.
Methods: Design cross-sectional study. Consecutive patients who met ACR criteria for OA knee from an outpatient clinic were included. Demographic data and regular dietary habits were evaluated. Anthropometric evaluation according to criteria of ISAK (International Society for the Advancement of Kinanthropometry) was performed. Functional status was evaluated by means of HAQ, WOMAC and EuroQol. Kellgren and Lawrence (K-L) grading scale was applied to knee radiographic studies in order to evaluate severity of the disease. Descriptive statistics analysis was performed, bivariable analysis was done properly using Wilcoxon test, median test, Student t test and Fisher exact test.
Results: 94 patients were included, 88% women, mean age 61.8 vs. male 63.7 years old, mean disease duration from diagnosis was higher in men, 3.6 vs. 2.2 years in women (p=0.006). Frequent comorbidities in women were hypertension 40.5%, osteoporosis 29.2% and dyslipidemia 19.1%. Body Mass Index (BMI) was 28.5 in women vs. 27.4 in men. Overweight prevalence was 34.8% in women vs 83% in men; obesity prevalence was 43.8% in women vs. 17% in men. Comparing current weight with healthy weight, women had 13.1 kg over in comparison with men with 9.3 kg. Evaluating waist circumference and using the WHO reference, more than 90% of OA patients had higher risk for developing chronic diseases. Patients with higher radiological score had worse pain in affected knee (p=0.05). Those patients with higher BMI had greater pain and stiffness, and lower functionality (p=0.001). Patients with overweight and obesity reported worse quality of life (QoL) compared with patients con normal weight (Graphic 1).
Conclusions: Patients with knee OA have a very high prevalence of overweight and/or obesity. These weight disorders have an important influence in pain, function and quality of life.



Graphic 1

310

COMPARISON OF TWO RESURFACING PROSTHESES FOR TREATMENT OF OSTEOARTHRITIS OF THE SHOULDER. PRELIMINARY RESULTS

I. Mechlenburg[1], **T. Christiansen**[1], M. Stilling[1], T. Klebe[2]
[1]Aarhus Univ. Hosp., Aarhus, Denmark; [2]Silkeborg Hosp., Silkeborg, Denmark

Purpose: Humeral resurfacing arthroplasty is used to preserve bone stock and restore normal anatomy in the osteoarthritic shoulder joint. The aim of this study was to examine the radiological and clinical outcome after Copeland and Global Cap humeral resurface replacement.
Methods: 21 patients (10 females) at a mean age of 64 (39-82) years and with shoulder osteoarthritis were included and randomized to a Copeland (11) or Global Cap (10) prosthesis. Both prostheses were uncemented. At 1, 6, 12 and 24 weeks migration of the prosthesis was measured with use of RSA, conventional radiographs were obtained for a geometrical analysis, and the patients were followed clinically with Constant Shoulder Score (CSS) and Western Ontario Osteoarthritis of the Shoulder Index (WOOS). At 1, 12 and 24 weeks the periprosthetic bone mineral density (BMD) was measured with DEXA.
Results: At 6 months, 13 patients could be evaluated for prostheses migration. The median total translation was 0.09 mm for the Copeland prostheses and 0.33 mm for the Global Cap (p=0.20).
16 patients had BMD measured 6 months after surgery. Around the Copeland prostheses, BMD decreased from 0.55 to 0.39 g/cm^2 (p= 0.02) and around the Global Cap, BMD changed from 0.46 to 0.36 g/cm^2 (p=0.21).
15 patients completed CSS and WOOS at 6 months. In the group with a Copeland prosthesis, CSS increased from 55 to 68 (p=0.25) and WOOS improved from 1019 to 535 (p=0.03). For the patients with a Global Cap, CSS improved from 32 to 57 (p= 0.12) and WOSS improved from 1311 to 477 (p= 0.01).
LGHO was measured for 15 patients at 6 months. The median difference in LGHO pre- to postoperative for the Copeland was 0.32 (-0.40 - 0.53) cm and the median difference for the Global Cap was -0.17 (-0.37 - 0.22) cm.
Conclusions: Based on these preliminary results, the performance of the 2 prostheses is comparable. Yet, we consider that there is a problem with overstuffing in the Copeland prosthesis.

311

TOWARDS TESTING THE HYPOTHESIS THAT THE INITIAL INJURY PATTERN IS AN IMPORTANT DETERMINANT OF POST-TRAUMATIC ARTHRITIS

N. Trentacosta, I.M. Levy, N.J. Cobelli, **J.A. Hardin**
Albert Einstein Coll. of Med., Bronx, NY

Purpose: Present evidence indicates that surgical repairs of ACL tears do not alter subsequent risk for OA, a complication that develops in over half of affected joints within 10 to 15 years. We hypothesize that an important determinant of this outcome is the extent of initial injury. To develop an approach for testing this hypothesis, we have assessed the information captured at the time of the repair in patients treated by a single orthopedic surgeon using a standardized reconstruction technique.